

Study of Thalweg Meander-Forming Processes by Physical Model

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ABSTRACT

Natural meandering channels are one of the most complex hydrodynamics problems in all over the Globe. The flow is complex in nature particularly in pools, where flow patterns are peculiar in nature of any meandering channel. For this reason channel at pools and riffles are always changing its own shape by erosion and deposition. The flow pattern of the meandering channel is spiral, secondary currents or transverse circulation flow in nature. A physical model has been developed for the study of basic meander geometry of any alluvial channel. Three discharges have been taken for study of the model. All data are collected in steady state condition of the model and after regime. Three empirical equations are developed for the study of thalweg meandering channel profile. From these equations it is established that model channel has been followed the natural law of meandering channel property. The regression coefficients of the empirical equations are satisfactory compared to present established equation. The natures of curves are six degree polynomial. The thalweg of meander is sign generated curve rather than regular sign curve. Model study also established that meandering thalweg is more stable than straight thalweg in alluvial channel. Study of this model channel morphology and hydraulics of meanders are validating with the prototype river Nagar in West Bengal.